

A NEW SPECIES OF *CROSSLANDIA* (NUDIBRANCHIA: DENDRONOTACEA)
FROM THE GULF OF CALIFORNIA

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Members of the dendronotacean nudibranch family Scyllaeidae have been reported throughout the equatorial and temperate seas for over two centuries. Seba (1743) first published an illustration of one of these species as *Pullus Ranae Piscatricis Quartae*. He thought it was the young of a fish and figures it in an inverted position. Several years later, Linnaeus (1758) named this species *Scyllaea pelagica*, thus establishing the binomial. Linnaeus, however, continued the error of describing the animal upside down.

Presently, Scyllaeidae contains three genera: *Scyllaea* Linnaeus, 1758, *Crosslandia* Eliot, 1902, and *Notobryon* Odhner, 1936. Characteristics of the genera are detailed in Odhner (1936: 1096-1103).

Crosslandia daedali Poorman and Mulliner,
new species

Description—Body long, about 25 mm in length, narrow and deep; produced forward in a long neck and posteriorly in a short tail (Fig. 1). Wide winglike lobes extended laterally along the middle one-half of each side; lobes irregularly notched and digitate (Fig. 2). Head blunt, with an abbreviated vellum on upper portion of the buccal opening. Rhinophores retractile in hollow of flaring rhinophore sheaths; conical, perfoliate with 22 leaves. Numerous fimbriating retractable branchial tufts irregularly placed on the inside surface of the lobes and the dorsal area between (Fig. 2). A caudal crest extended over the tail section.

Color of animal greenish brown-orange; longitudinal fine chestnut brown lines with some white lines on sides and undersides of lobes; a

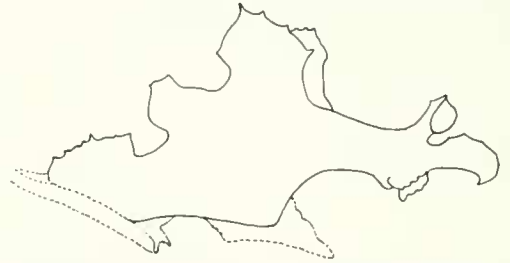


FIG. 1. Sketch of a living *Crosslandia daedali* (25 mm in length) crawling over *Padina*; lateral view, anterior to the right. Drawing by A. D'Attilio.

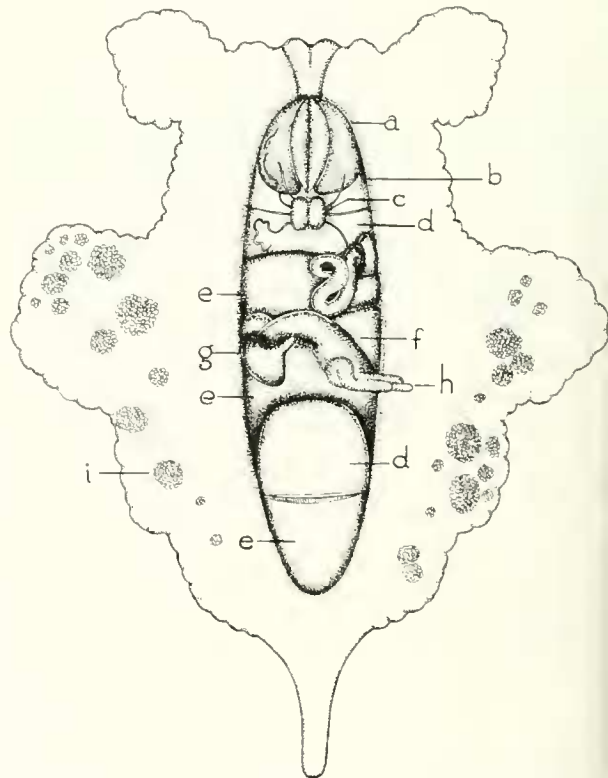


FIG. 2. Dorsal view of *Crosslandia daedali*, showing the branchiae on the inner surface of the body lobes and various internal organs. a, jaw plates; b, pharyngeal bulb; c, gizzard; d, liver mass; e, three-part hermaphroditic gland; f, stomach; g, heart; h, anus; i, branchial tufts. Drawing by A. D'Attilio.

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narrow light-colored border along the thin edge of the rhinophore sheaths, along the sides of neck, around edge of lobes and crest of tail; irregular black to brown blotches on some animals. Brilliant blue small round spots medially along sides of body, about 6 in number, about 5 spots medially on the dorsum, most spots with fine black borders. A row of 4-6 flesh-colored, sharply conical tubercles along median line of each side of the animal.

Jaw plates (Fig. 3) large and hinged dorsally with the muscles attached at the bend and

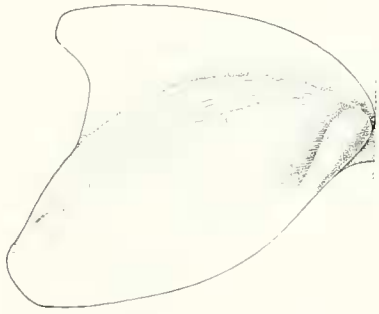


FIG. 3. Lateral view of the jaw of *Crosslandia daedali*. Drawing by A. D'Attilio.

covering the large tessellated stiff cheeks. The radula with 15 longitudinal rows of teeth denticulated on both sides (Figs. 4 and 5); central tooth slightly flattened, smaller than the laterals. The radula formula $15 \times 25 \cdot 1 \cdot 25$.

The hermaphrodite gland (Fig. 6) of three masses, two posterior, one on each side of a liver mass located in the mid-dorsal region; the third mass located anterior on the right side of the animal. The genital opening beneath the rhinophore sheath on the right side. The spermatheca connecting directly into the vagina. The large ampulla connected by a long convoluted tube to the genital orifice. The liver in two large masses anterior and posterior. The stomach armed with 14 plates in a constricting ring. The anus located midpoint of the side below the right lobe.

Type-locality—Tinajas, Bahía de Bacochibampo, Sonora, Mexico ($27^{\circ}56'N$; $110^{\circ}59'W$).

Material examined—Holotype, San Diego Natural History Museum, Department of Marine Invertebrates, Type Series No. 514. Col-

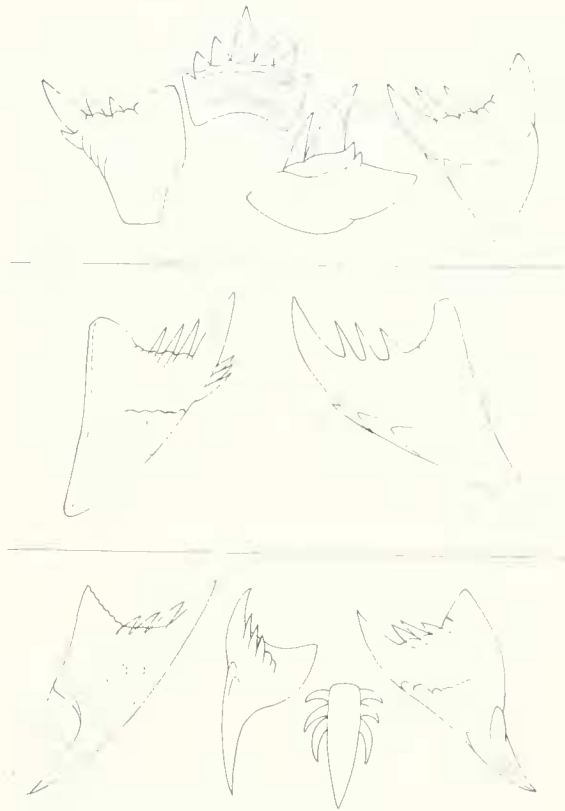


FIG. 4. Sketches of various views of assorted radular teeth. Drawings by A. D'Attilio.

lected at Tinajas, Bacochibampo Bay, Sonora, Mexico ($27^{\circ}56'N$; $110^{\circ}59'W$); 4 December 1975, by Roy and Forrest Poorman. Paratypes, collected with the holotype specimen, are deposited in the malacology (or marine invertebrate) collections of the San Diego Natural History Museum (SDNHM Type Series No. 515), the Los Angeles County Museum of Natural History (LACM 1910), and the United State National Museum (USNM 795112).

Additional material was collected at Tinajas, Sonora, Mexico, on 23 October 1976. Also, 4 specimens were collected at Bahía de Algodones, Sonora, Mexico, and 1 specimen was collected on the east side of Punta Cuevas, Bahía de San Carlos, Sonora, Mexico.

Etymology—This species is named in recognition of the Greek, Daedalus. When the animal is at rest, it attaches to *Padina* with the posterior part of the foot. With its lateral lobes extended



FIG. 5. Scanning electron micrographs of the lateral teeth of *Crosslandia daedali*. Top and middle, approximately 635 \times . Bottom, approximately 1300 \times . Microscopy by Robert Pettyjohn.

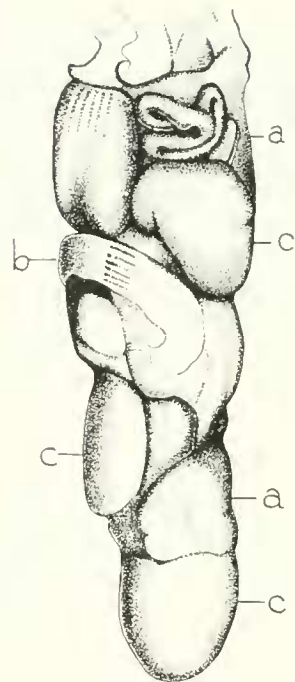


FIG. 6. Sketch of the viscera of *Crosslandia daedali*. a, liver mass; b, stomach; c, hermaphroditic gland. Drawing by A. D'Attilio.

and head and neck raised, it appears to reach outward from the stem. Just so must the legendary Daedalus have looked as he fastened on his feathers and paused before launching into his winged flight.

DISCUSSION

Crosslandia daedali has been found only on the Sonoran shores of the Gulf of California, in the Guaymas area. It is the first record of the genus from the Eastern Pacific. Its known congener, *C. viridis* Eliot, 1902, has been reported only from Zanzibar, the Red Sea and Japan.

There are distinctive internal anatomical features which distinguish these two species. In *Crosslandia daedali* the masticatory edge of the jaws is smooth and flexible, bending outward and forming stiff cheeks which are attached full length. By contrast, a slit separates the bottom one-third of the jaw plate at the bend in *C. viridis*. The spermatheca of *C. daedali* is attached directly to the vagina, whereas in *C. viridis* it is connected by a long tube.

Externally, the new species consistently

shows a narrow, light-colored border along the sharp edges of the body and all the appendages. This is not apparent on *Crosslandia viridis*.

Crosslandia daedali consumes small hydroids growing on the surface of the algae. The nudibranchs graze slowly over the surface or attach to the stems with a small central portion of the foot, resting with the head and neck extended and the lateral lobes projecting at an angle of about 45° from the vertical. Because of coloring and irregular shape, these animals are mimetically camouflaged, resembling another piece of torn algae.

ACKNOWLEDGMENTS

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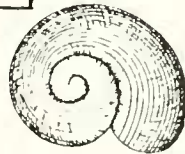
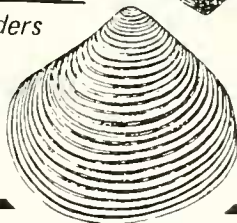
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